

# Posters

## Evaluation of a Questionnaire on Management Practices as a Diagnostic Tool to Determine *Mycobacterium avium* subsp *paratuberculosis* Infection Status in Quebec Dairy Herds

S. Buczinski<sup>1</sup>, Dr Vet, MSc, DACVIM; J.P. Roy<sup>1</sup>, DMV, MSc, DECBHM; G. Fecteau<sup>1</sup>, DMV, DACVIM; O. Labrecque<sup>2</sup>, DMV, MSc, DACVM; P. Aubry<sup>3</sup>, DMV, BSc

<sup>1</sup>Faculte de Medecine Veterinaire, Universite de Montreal, St-Hyacinthe, QC, Canada J2S 8H5

<sup>2</sup>Laboratoire d'épidémiologie animale du Québec, Saint-Hyacinthe, QC, Canada J2S 8H5

<sup>3</sup>Animal Health Science Division, Canadian Food Inspection Agency, Ottawa, ON, Canada K1A 0Y9

### Introduction

The determination of herd status in regard to *Mycobacterium avium* subsp *paratuberculosis* (MAP) infection in dairy cattle is important since MAP infection is associated with important production losses even before clinical cases are identified. Several diagnostic strategies exist to diagnose MAP infection at the herd level. Producers may resist investing time and money on diagnostic procedures if they do not believe the disease is present in the herd. The aim of this study was to assess a questionnaire based on risk factors for transmission of MAP in Quebec dairy herds as a screening tool for identifying positive herds.

### Materials and Methods

This study was conducted as a case-control study. Twenty-nine dairy herds from different geographical regions of Quebec were recruited. Herds were anticipated to be infected with MAP if they had one confirmed clinical case in the last three years. For every infected herd, an anticipated negative herd from the same practice was randomly selected as a control herd. Negative herds were herds where MAP infection was not suspected by the practitioner. Blood and feces were collected of up to 30 cows in their second or greater lactation. Serum was tested by ELISA (Herdcheck M pt Antibody ELISA, Idexx) and fecal samples were cultured for MAP detection (MGIT 960 Liquid Media). On the same day, a questionnaire was administered to the owner. The questions were grouped by sections: 1) calving area and management of the neonatal calf (NEO); 2) management of calf before weaning (PREW); 3) management of calf post-weaning but pre-breeding (POSTW); 4) management of heifer in the breeding period and before calving (HF); and 5) management of adult cow practices (COW). A partial score was obtained for each section as well as a total score.

Each score was then transformed in a percentage based on the number of points obtained / total of points that could be obtained. Three different herd classifications were used. The first classification (C1) was based on the anticipated status of the herd. A second classification (C2) defined a positive herd as a herd with one MAP positive result from any diagnostic test. A third classification (C3) defined positivity as one positive fecal culture or two or more positive serum ELISA. The mean (+/- sd) for each questionnaire category were calculated for positive and negative herds according to C1, C2, and C3. A t-test for equal variance was used to compare the score obtained from positive and negative herds. The receiver-operator characteristics were then estimated for portions of the questionnaire significantly different within positive and negative herds. The level of statistical significance was set at  $P < 0.05$ .

### Results

Thirty one herds had at least one positive result and 27 herds had all test negative (C2 classification). A total of 26 herds were finally classified as positive and 32 negative using C3 classification which was finally retained for other analysis. The total score for the questionnaire was significantly different between positive herds (41.2+/-10.5%) and negative herds (33.8+/-9.4%) ( $P=0.0076$ ). The partial scores observed for POSTW, HF, and COW were higher for positive herds than negative herds ( $P=0.0086$ ; 0.059 and 0.04 respectively). A total score percentage of  $\geq 50\%$  had a sensitivity of 23.1% and a specificity of 96.9% for detecting a positive herd as defined by C3. A score of  $\geq 40\%$  for HF had a sensitivity of 50% and a specificity of 75% for detecting a positive herd. A score of  $\geq 30\%$  for POSTW had a sensitivity of 38.5% and a specificity of 81.3% for detecting a positive herd. A score of  $\geq 26\%$  for COW had a sensitivity of 50% and a specificity of 81.3% for detecting a positive herd.

### **Significance**

A score obtained from a questionnaire based on risk assessment and filled by the practitioner with the farm manager may be helpful as a screening test. Since the

questionnaire is based on risk factor assessment, it could potentially be a valuable tool to identify the specific risk factors present in the herd.